

DEVELOPING STREAM CORRIDOR PROTECTION POLICIES

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Abstract. Many local governments in Georgia are required to develop stream corridor protection ordinances to comply with the Georgia Planning Act, Mountain and River Corridor Protection Act, and other state laws. Some governments view this not as a burden but as an opportunity to develop comprehensive, scientifically-grounded stream corridor protection programs. We are working with local and state officials, scientists and others to provide information and materials to support local governments in their efforts. The project consists of three components: (1) developing scientifically and legally defensible guidelines for stream corridor width, extent and vegetation; (2) making policy recommendations to counties to implement these guidelines; and (3) analyzing potential problems with protecting stream corridors, such as landowner concerns regarding property rights.

INTRODUCTION

The health of streams and rivers depends to a great extent on the lands that surround them. Over the last two decades, researchers have shown that preserving naturally vegetated corridors along streams can "buffer" degrading effects of land uses, while reducing the impact of floods, providing habitat for wildlife and offering recreational benefits to people (e.g., Lowrance et al 1984, Peterjohn and Correll 1984; reviews by USACE 1991, Desbonnet et al 1994). Protected stream corridors or "riparian buffers" are now widely advocated by a range of federal and state agencies for protecting water quality on agricultural, forestry, and other lands (e.g. GSWCC 1994, GFC 1998, USEPA 1998). In Georgia, many local governments are developing their own programs to protect stream and river corridors, often under the mandate of state laws such as the Georgia Planning Act and the Mountain and River Corridor Protection Act. Some local governments view these requirements not as a burden but as an opportunity to protect their natural resources.

Unfortunately, many counties and municipalities in Georgia do not have the capacity to create effective regulatory mechanisms for stream corridor protection. The Department of Natural Resources' Environmental Protection Division (EPD) has issued a set of minimum standards to help

guide local governments, but these are not based on current scientific research. Some counties and municipalities fear that without solid scientific support, buffer regulations will neither be legally defensible nor provide adequate protection.

We have worked over the past year to develop a set of scientifically-based guidelines for riparian buffers and to help local governments develop effective, defensible stream corridor protection policies.

PROJECT OVERVIEW

This project includes four major components:

1) A review of the scientific literature on stream corridors. Supported by consultations with ecologists, hydrologists and other researchers, this serves as the basis for our recommendations for stream corridor width, extent and vegetation.

2) A review of existing stream corridor protection programs and the legal tools available to protect stream corridors in Georgia. Based on these reviews we have developed policy recommendations for local governments. These are included in a guidebook along with a discussion of related issues of concern, including the legal basis for buffer protection and the issue of "takings."

3) An analysis of certain economic and social costs and benefits of stream corridor protection. This includes answering questions such as, "how much land does the average property owner lose to stream corridor protection?" and "what economic benefits do property owners derive from stream corridor protection?" (as of this writing, this part is still in progress).

POLICY RECOMMENDATIONS

The review of the scientific literature showed that riparian buffers can effectively perform a range of functions, including trapping contaminants, stabilizing stream banks and preserving wildlife habitat (Figure 1). They do have some limitations, however: riparian buffers can become "saturated" with phosphorus and some other contaminants, limiting their ability to trap additional contaminants of that type.

Table 1. Selected Riparian Buffer Functions. This chart lists the effectiveness of buffers at performing a range of functions.

Function	Effectiveness
Trapping sediment in runoff	Very effective
Trapping/removing N in runoff	Very effective
Trapping /removing P in runoff	Somewhat effective
Stabilizing stream banks	Very effective
Protecting aquatic habitat	Very effective
Protecting terrestrial habitat/providing movement corridors for animals	Somewhat effective

For that reason such contaminants should also be managed at their source. Additionally, the effectiveness of buffers at performing many functions is related to their width, the slope of the stream valley, and other factors. Obviously, only some of these factors are under the control of the local government.

We have developed a set of guidelines for those factors that are subject to management—namely, riparian buffer width, extent (i.e., which streams are protected) and vegetation type. These recommendations have been reviewed by some of the leading riparian buffer researchers to ensure that they are reasonable interpretations of the available information. According to these guidelines, buffers should be at least 50 ft wide, and wider for steeper slopes or if wetlands and impervious surfaces are present. Because it is not possible to make precise recommendations on buffer width based on the existing riparian literature we have proposed three width options, which are summarized in Table 2. In terms of extent, all perennial streams and rivers as well as significant intermittent streams should be protected. Buffer vegetation should consist of native forest.

To support local governments in implementing these buffers we have prepared a guidebook that includes supporting information and a model ordinance. The purpose of this book is to give local officials the tools and the information to develop riparian buffer ordinances that are scientifically, legally and politically defensible. The major sections of the guidebook are summarized here.

Review of Existing Stream Corridor Protection Programs

A number of local governments in Georgia have already enacted river corridor protection ordinances. Some have modelled their regulations precisely on the standards issued

by the state, while others have enacted more restrictive and innovative measures. Douglas County has had multi-tiered stream corridor protection zoning since 1976. This protects 100 ft buffers on Bear Creek and Dog River and restricts the density of development along other rivers. Alpharetta has a 100 ft wide buffer on all streams. Fulton County passed a stream corridor protection ordinance for the southern portion of the county in 1998, placing 75 ft buffers (with additional 25 ft setbacks) on all streams and rivers. We hope that these case studies will aid local governments in developing their own riparian buffer programs.

Tools for Protecting Stream Corridors

Local governments can use a number of different approaches to protecting stream corridors. If the county or municipality has already enacted zoning, then the best method is to establish overlay stream corridor zones. An overlay zone places a set of restrictions on a designated affected area *in addition* to those applied by the parcel zoning. For areas without zoning, the best approach is to use a freestanding riparian buffer ordinance, which has essentially the same effect. There are other options as well. The municipality of Alpharetta established buffers through its erosion and sediment control ordinance. While this makes sense logically, it has a significant disadvantage: under the Erosion and Sediment Control Act of 1974, the EPD has sole authority to grant variances. This weakens the ordinance because the EPD routinely grants such variances. Finally, a floodplain ordinance could be used to protect riparian buffers, although it appears that no local government has yet exercised this option in Georgia.

Major Issues of Concern

Perhaps the greatest concern of many local government officials is that a stream corridor protection ordinance could be considered a "taking"—that is, it will deprive property owners of their rights or decrease property values so that compensation will be required. If an ordinance is properly worded this should not be the case. It is clearly within the designated powers of local governments in Georgia to establish riparian buffers to protect water quality. Unless a buffer ordinance deprives a landowner of virtually all economic use of his property, or requires that others have access to the property, then the ordinance should be completely defensible (Zoeckler 1997).

In fact, in 1996 the Georgia Supreme Court held that the 50 ft buffers along the Chattahoochee River mandated by the Metropolitan River Protection Act were not a taking. The court declared that "there has been no showing that the buffer area or any other applicable regulation has deprived the condemnees of any or all economically viable or beneficial use of their property... Nor is this a situation in which it can

Table 2. Stream Corridor Guidelines. Any of the three options outlined here are defensible according to the scientific literature on riparian buffers. Options 1 and 2 are preferable because they incorporate important factors into the width. Option 1 is the most protective of water quality; Options 2 and 3 are less protective.

		Option 1 (Most Protective)	Option 2	Option 3
Type of Buffer		Variable width	Variable width	Fixed width
Base Width		100 ft	50 ft	100 ft
F a c t o r	Slope	+2 ft per 1% slope		NA
	Wetlands	add width of wetlands to buffer width		NA
	Impervious surfaces	add width of impervious surfaces to buffer width		NA
	Floodplain	extend buffer to edge of floodplain	NA	
Affected Streams		All perennial streams and significant intermittent streams		
Buffer Vegetation		Mature forest		

be argued that fairness and justice dictate that the burden imposed by the regulation be borne by the public as a whole” [*Threatt v Fulton County*, 266 GA 466,470 (1996)].

A good way to assuage landowner concerns while strengthening the buffer protection ordinance is to clearly establish the rules for issuing variances. Variances should only be granted in two cases. The first is when the buffer covers so much of a parcel that there is no reasonable economic use for the remaining land. Under such circumstances, the buffer may be reduced to allow for reasonable activity, though the buffer should never be reduced to less than 25 ft. The second case is when structures cannot reasonably be located outside of the buffer because of their nature. These include such things as canoe launches and boat docks, but not vacation homes, which could be located elsewhere.

CONCLUSIONS

Riparian buffers have been shown to be an effective tool for protecting water quality and wildlife habitat. Buffers should be at least 50 ft wide (preferably wider), should protect all perennial streams and should consist of native forest. We have developed a guidebook to aid local governments in developing riparian buffer protection programs. In this guidebook we review examples of existing local buffer programs and discuss the merits of various types of buffer ordinances. The preferred ordinance types are stream corridor overlay zones— for local governments that have enacted zoning— and freestanding

ordinances for other local governments. We also discuss how buffer ordinances should not constitute a “takings” if properly written, and we review the importance of establishing clear variance procedures.

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